

AMENDMENT

Amendments to the Claims

1. (currently amended) A surgical instrument, comprising:

a shaft comprising a frame, a firing member supported by the frame configured to transfer an actuating motion, and comprising an articulation drive tube encompassing the frame and firing member and configured to transfer a rotational motion about a longitudinal axis thereof;

a handle portion proximally attached to the frame and coupled to the shaft operably configured to produce the actuating motion and the rotational motion;

an end effector distally, pivotally attached to the frame for ~~arcuate~~ lateral articulation about a pivot axis perpendicular to the longitudinal axis of the frame and responsive to the actuating motion wherein a distal longitudinal axis defined through the end effector and a proximal longitudinal axis defined through the shaft remain coplanar during arcuate articulation; and

a gear train articulation mechanism responsive to the rotational motion to articulate the end effector ~~in a coaxial movement~~, comprising:

a spur gear attached to the end effector and aligned in an arc proximal to and equidistant from a the perpendicular pivot axis of the pivotal coupling of the end effector, and

a gear section presented about at least a portion of a distal end of the articulation drive tube communicating the rotational motion to the spur gear of the pivotal coupling of the end effector.

2. (original) The surgical instrument of claim 1, wherein the end effector comprises a stapling and severing mechanism, wherein the actuating motion comprising a longitudinal firing motion and the stapling and severing mechanism is further responsive to a longitudinal closing motion, the handle portion and shaft configured to produce and transfer the firing and closing motions.

3. (currently amended) The surgical instrument of claim 2, wherein the shaft includes a closure member responsive to the longitudinal closing motion and pivotally coupled to the end effector, the shaft further includes a firing bar and a the frame supporting the firing bar ~~figured~~ configured to transfer the firing motion to the end effector, ~~the articulation mechanism including an articulation drive tube communicating the rotational motion to the pivotal coupling of the end effector.~~

4. (currently amended) The surgical instrument of claim 3 1, wherein the ~~pivot coupling~~ pivotal attachment at the pivot axis comprises a pair of distally projecting, laterally opposed posts extending from the ~~closure member~~ frame respectively coupled to a pair of proximally projecting, laterally opposed pivot points extending from the end effector.

5-6. (canceled)

7. (currently amended) A The surgical instrument of claim 1, ~~comprising:~~

~~a shaft configured to independently transfer an actuating motion, and a rotational motion about a longitudinal axis thereof;~~

~~a handle portion coupled to the shaft operably configured to produce the actuating motion and the rotational motion;~~

~~an end effector responsive to the actuating motion; and~~

~~an articulation mechanism responsive to the rotational motion to articulate the end effector in a coaxial movement wherein a distal longitudinal axis defined through the end effector and a proximal longitudinal axis defined through the shaft remain coplanar during articulation;~~

wherein the shaft further comprises an articulation drive tube responsive to the rotational motion from the handle portion and distally terminating in a gear section, the articulation

mechanism comprising a spur gear proximally attached to the end effector and engaged by the gear section;

wherein the articulation drive tube further comprises a second gear section proximally recessed with respect to the first gear section, the end effector further comprises a proximally projecting gear section laterally opposite the spur gear, the surgical instrument further comprising a reversing gear engaged between the second gear section and the proximally projecting gear section.

8. (previously presented) The surgical instrument of claim 1, wherein the gear section and the spur gear form a bevel gear connection.

9-12. (canceled)

13. (currently amended) A surgical instrument, comprising:

a handle portion operably configured to produce a rotational motion;

a shaft having a longitudinal axis and comprising:

an elongate frame attached to the handle portion and defining a longitudinal axis,

an articulation drive tube encompassing the elongate frame and responsive to the rotational motion, and

a gear section distally projecting about at least a portion of a circumference of a distal end of the articulation drive tube;

an end effector pivotally coupled to the shaft at a pivot axis perpendicular to the longitudinal axis; and

a spur gear on the pivot axis, proximally attached to the end effector and engaged to the gear section to convert the rotational motion of the articulation drive tube to an articulation motion pivoting the end effector in a ~~coaxial~~ lateral arcing movement ~~wherein a distal~~

~~longitudinal axis defined through the end effector and a proximal longitudinal axis defined through the shaft remain coplanar during articulation;~~

wherein the articulation drive tube further comprises a second gear section proximally recessed with respect to the first gear section, the end effector further comprises a proximally projecting gear section laterally opposite the spur gear, the surgical instrument further comprising a reversing gear engaged between the second gear section and the proximally projecting gear section.

14-22. (canceled)

23. (new) The surgical instrument of claim 1, wherein the spur gear is aligned with the longitudinal axis of the frame presenting gear teeth to each lateral side of the articulation drive tube, the first gear section of the articulation drive tube positioned on one lateral side comprising a plurality of slanted snaggle teeth engaging gear teeth on one lateral side of the spur gear, further comprising a second gear section of the articulation drive tube opposite to the first gear section comprised of a plurality of oppositely slanted snaggle teeth engaging corresponding gear teeth on the other lateral side of the spur gear.